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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,179	03/26/2004	Naoki Katayama	004553.108040	2023

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EXAMINER	
UHLENHAKE, JASON S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/811,179	KATAYAMA, NAOKI	
	Examiner	Art Unit	
	Jason Uhlenhake	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *3* is/are withdrawn from consideration.

5)☒ Claim(s) *4; 6-9; 13; 21-23* is/are allowed.

6)☒ Claim(s) *1-3,5,10-12,14-20,24 and 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 5, 11, 16, 17, 18 , 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al (6,386,672) in view of Yamada et al (U.S. Pub. 2002/0105567).

Kimura et al discloses:

- ***regarding claim 1,*** recording apparatus comprising: a printing head which has a plurality of recording elements and performs recording on a recording medium; head holder (case) which holds the printing head (Column 1, Lines 64 – 67; Column 2, Lines 1 – 11)
- a heatsink (18) which is disposed between the flexible wiring board (13) and the head holder (11) and releases heat generated by the driver element (Figure 4; Column 4, Lines 39 – 48)
- ***regarding claim 5,*** the heatsink comprises a first portion disposed between the flexible wiring board and the head holder and a second portion extending from an edge of the first portion into a space other than between the flexible wiring board and the head holder (Figure 4)
- ***regarding claim 11,*** a printing head which has a plurality of recording elements and performs recording on a recording medium; head holder (case) which holds the printing head (Column 1, Lines 64 – 67; Column 2, Lines 1 – 11)

- surface of the flexible wiring board (13) on which the driver element (20) is disposed, opposite the heatsink (18), at a position corresponding to a positioning the surface where the driver element (20) is disposed (Figures 3, 11; Column 3 Line 63 – Column 4 Line 10)

- a heatsink (18) which is disposed between the flexible wiring board (13) and the head holder (11) and releases heat generated by the driver element (Figure 4; Column 4, Lines 39 – 48)

- ***regarding claim 25,*** a portion of the surface of the heatsink (18) to be opposed to the head holder (11), which portion comprises a first area corresponding to the driver element (20) and a second area surrounding and adjacent to the first area, is not in contact with the head holder (11) (Figure 4)

- ***regarding claim 16,*** the heatsink (18) comprises a first portion disposed between the flexible wiring board (13) and the head holder (11) and a second portion extending from an edge of the first portion into a space other than between the flexible wiring board and the head holder (Figure 9)

- ***regarding claim 18,*** a portion of the surface of the heatsink (18) to be opposed to the head holder (11), which portion comprises a first area corresponding to the driver element (20) and a second area surrounding and adjacent to the first area, is not in contact with the head holder (11) (Figure 4)

Kimura et al does not disclose expressly the following:

- ***regarding claim 1,*** on outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band

- ***regarding claims 11, 17,*** a cover which is disposed on a side of the flexible wiring board opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the drive element and the cover, such that the driver element is pressed toward the heatsink by a pressing force of the elastic member

- ***further regarding claim 11,*** an outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band

Yamada et al discloses:

- ***regarding claims 1, 11,*** on outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band (Figures 2 – 3; Paragraph 0054), for the purpose of electrically connection with external equipment.

- ***further regarding claims 11, 17,*** a cover which is disposed on a side of the flexible wiring board (40) opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the drive element and the cover, such that the driver element is pressed toward the heatsink/lid plate (54) by a pressing force of the elastic member (Figures 3, 10; Paragraph 0064), for the purpose of allowing the driving element/chip to discharge heat.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of a cover which is disposed on a side of the flexible wiring board opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the drive element and the cover, such that the driver element is

pressed toward the heatsink by a pressing force of the elastic member; on outer side of an outer side of the head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band as taught by Yamada et al into the device of Kimura et al. The motivation for doing so would have been to electrically connect with external equipment and allow the drive element/chip to discharge heat.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al (6,386,672) as modified by Yamada et al (U.S. Pub. 2002/0105567) as applied to claim 1 above, and further in view of Sattler (U.S. Pat. 6,095,701).

Kimura et al as modified by Yamada et al discloses all the claimed limitations except for the following:

- ***regarding claim 10,*** a carriage which is movable in a direction substantially parallel to the recording medium, and wherein the heatsink has a planar surface substantially parallel to a direction of movement of the carriage

Sattler discloses:

- ***regarding claim 10,*** a carriage which is movable in a direction substantially parallel to the recording medium, and wherein the heatsink has a planar surface substantially parallel to a direction of movement of the carriage (Figure 1; Column 5, Lines 5 – 20), for the purpose of ensuring precise and high quality printing.

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of a carriage which is movable in a direction

substantially parallel to the recording medium, and wherein the heatsink has a planar surface substantially parallel to a direction of movement of the carriage as taught by Sattler into the device of Kimura et al as modified by Yamada et al. The motivation for doing so would have been to ensure precise and high quality printing.

Claims 2, 15, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al (6,386,672) in view of Yamada et al (U.S. Pub. 2002/0105567) and Shiraishi et al (U.S. Pat. 5,428,373)

Kimura et al discloses:

- ***regarding claims 2, 15,*** surface of the flexible wiring board (13) on which the driver element (20) is disposed, opposite the heatsink (18), at a position corresponding to a positioning the surface where the driver element (20) is disposed (Figures 3, 11; Column 3 Line 63 – Column 4 Line 10)
- ***further regarding claim 2,*** a printing head which has a plurality of recording elements and performs recording on a recording medium; head holder (case) which holds the printing head (Column 1, Lines 64 – 67; Column 2, Lines 1 – 11)
- a heatsink (18) which is disposed between the flexible wiring board (13) and the head holder (11) and releases heat generated by the driver element (Figure 4; Column 4, Lines 39 – 48)
- ***regarding claims 14, 20,*** a portion of the surface of the heatsink (18) to be opposed to the head holder (11), which portion comprises a first area corresponding to the driver

element (20) and a second area surrounding and adjacent to the first area, is not in contact with the head holder (11) (Figure 4)

Kimura et al does not disclose expressly:

- ***regarding claims 2, 15,*** the heatsink is directly held in close contact with a surface of the flexible wiring board

- ***further regarding claim 2,*** on outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band

- ***regarding claims 12, 19,*** a cover which is disposed on a side of the flexible wiring board opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the driver element and the cover, the driver element being pressed to the heatsink via the flexible insulating band, by pressing force of the elastic member

Yamada et al discloses:

- ***further regarding claim 2,*** on outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band (Figures 2 – 3; Paragraph 0054), for the purpose of electrically connection with external equipment.

- ***regarding claims 12, 19,*** a cover which is disposed on a side of the flexible wiring board (40) opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the driver element/chip and the cover, the driver element (55) being pressed to the heatsink/lid plate (54) via the flexible insulating band, by pressing force of

the elastic member (Figures 3, 10; Paragraph 0064), for the purpose of allowing the driver element/chip to discharge heat.

Shiraishi et al discloses:

- ***regarding claims 2, 15,*** the heatsink (130) is directly held in close contact with a surface of the flexible wiring board (132) (Figure 13; Column 4, Lines 25 – 38; Column 13, Lines 55 – 68), for the purpose of electrically connecting the electrical structure with an external circuit.

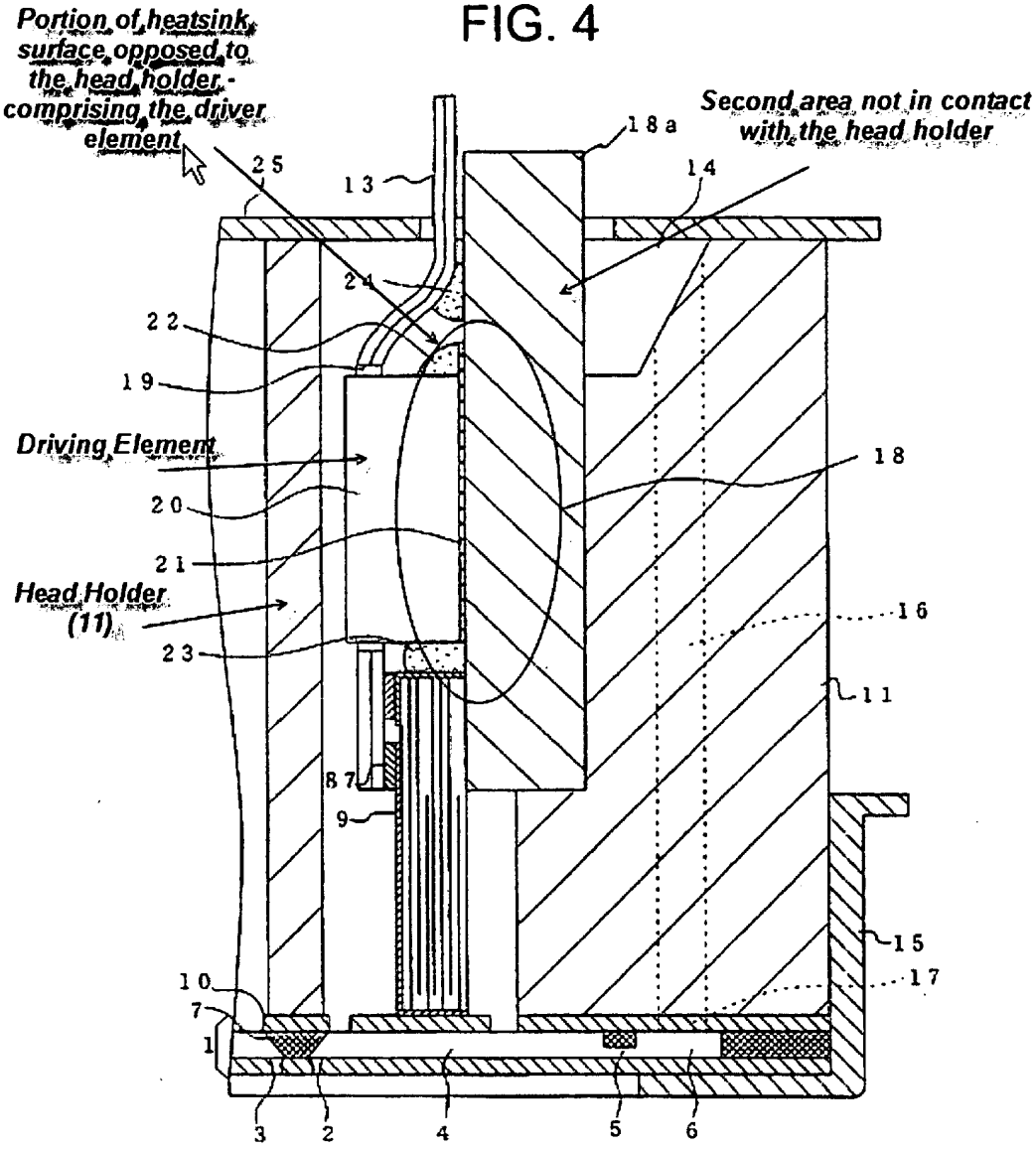
At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of on outer side of head holder a flexible insulating band; plurality of conductive wires; and a driver element for actuating the printing head, the conductive wires and the driver element being disposed on the flexible insulating band; the heatsink is directly held in close contact with a surface of the flexible wiring board; a cover which is disposed on a side of the flexible wiring board opposite to the head holder, and protects the flexible wiring board; and an elastic member provided between the driver element and the cover, the driver element being pressed to the heatsink via the flexible insulating band, by pressing force of the elastic member as taught by Yamada et al and Shiraishi et al into the device of Kimura et al. The motivation for doing so would have been to allow the drive element/chip to discharge heat; electrically connect the electrical structure with an external circuit and connect with external equipment.

Response to Arguments

Applicant's arguments with respect to claims 1 - 25 have been considered but are moot in view of the new ground(s) of rejection. Please see the above rejections for Claims 1 and 5 regarding Kimura et al (6,386,672) in view of Yamada et al (U.S. Pub. 2002/0105567). They disclose a flexible insulating band comprising conductive wires and a driving element on the outer side of the head holder.

Regarding claim 14, Kimura does disclose "a portion of the surface of the heatsink to be opposed to the head holder, which portion comprises a first area corresponding to the driver element and a second area surrounding and adjacent to the first area, is **not** in contact with the head holder" as claimed by the applicant, please see the following figure 4 of Kimura.

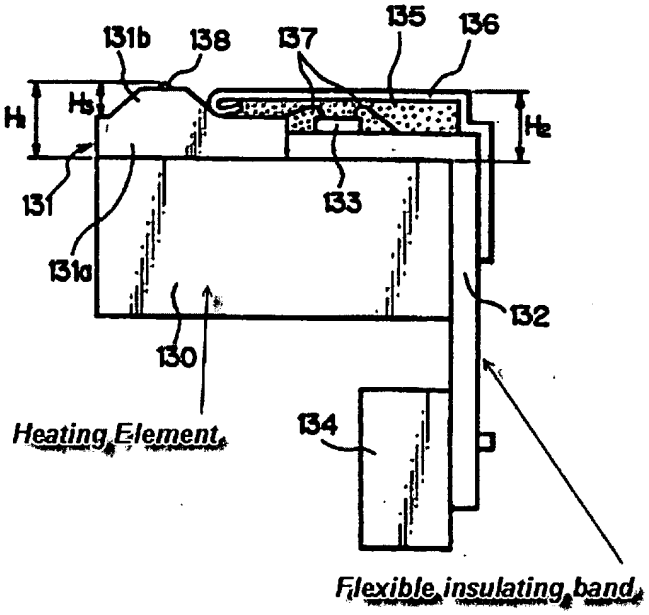
FIG. 4



Regarding claim 2, Kimura et al (6,386,672) in view of Yamada et al (U.S. Pub. 2002/0105567) and Shiraishi et al (U.S. Pat. 5,428,373) discloses that the heatsink is directly held in close contact with a surface of the flexible insulating band which surface is opposite to another surface of the flexible wiring board insulating band on which the driver element is disposed. Figure 13 specifically shows the flexible insulating band in close contact with a

heatsink (Shiraishi et al; Column 4, Lines 25 – 38; Column 13, Lines 55 – 68), for the purpose of electrically connecting the electrical structure with an external circuit.

Fig. 13



Regarding claim 11, Kimura et al discloses the recording apparatus structure of the heatsink disposed between the flexible wiring board and the head holder, and Yamada et al discloses a cover protecting the flexible wiring board and a elastic member pressing the driver element toward the heatsink, please refer to the above rejections.

Allowable Subject Matter

Claim 4, 6 – 9, 13, 21 - 24 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 4 is the inclusion of the limitation of a recording apparatus that includes a heat sink being disposed between the flexible wiring board and the head holder such that the heatsink is paced from the outer surface of the head holder with a first clearance therebetween, the first clearance that is open to the atmosphere in its opposite ends in a direction of movement of the printing head. It is this limitation found in the claims, as it is claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

The primary reason for the allowance of claims 6 – 9, 13, 21 - 24 is the inclusion of the limitations of a recording apparatus that includes a relay circuit board to which the flexible wiring board is connected is disposed on the outer side of a second wall with a space there between; and first portion of the heatsink extends from the vicinity of a connecting portion where the edge of the first wall and an edge of the second wall are connected, while the second portion of the heatsink extends into a space between the relay circuit board and the head holder. It is these limitations found in each of the claims, as they are claimed in the combination, that has not been found, taught or suggested by the prior art of record which makes these claims allowable over the prior art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Uhlenhake whose telephone number is (571) 272-5916. The examiner can normally be reached on Monday - Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSU
July 7, 2006

K. FEGGINS
PRIMARY EXAMINER